

Unit 1 Practice Test

Variables and Translations. Write an algebraic expression for each phrase.

a. the sum of 5 and three times a number $5 + 3a$

b. 8 minus the product of 9 and a number $8 - 9x$

Define variables and write an equation to model the following situation.

a. The total cost of gas is the number of gallons times \$3.79.

$g = \text{gallons}$

$c = \text{cost}$

$$c = 3.79g$$

b. The perimeter of a regular octagon is 8 times the length of one side.

$P = \text{perimeter}$

$L = \text{length}$

$$P = 8L$$

GEMDAS. Simplify the following expressions.

$$2[(13 - 7)^2 \div 3]$$

$$2[(6^2) \div 3]$$

$$2[36 \div 3] = 2[12]$$

$$\boxed{24}$$

$$12 + 3[18 - 5(16 - 13)]$$

$$12 + 3[18 - 5(3)]$$

$$12 + 3[18 - 15]$$

$$12 + 3[3]$$

$$12 + 9 = \boxed{21}$$

$$36 - (4 + 5 \cdot 4)$$

$$36 - (4 + 20)$$

$$36 - 24 = \boxed{12}$$

$$9 + [4 - (10 - 9)^2]^3$$

$$9 + [4 - (1)^2]^3$$

$$9 + [4 - 1]^3$$

$$9 + 3^3$$

$$9 + 27 = \boxed{36}$$

Evaluate Expressions. Evaluate each expression. Use $a = 3$, $b = -2$, $c = 1$

$$2a^2 - (4b + c)$$

$$9(a + 2b) + c$$

$$2(3^2) - (4(-2) + 1)$$

$$9(3 + 2(-2)) + 1$$

$$2(9) - (-8 + 1)$$

$$18 - (-7) =$$

$$\boxed{25}$$

$$9(3 - 4) + 1$$

$$9(-1) + 1 = \boxed{-8}$$

$$4a - b^2$$

$$\frac{2a + b}{2}$$

$$4(3) - (-2)^2$$

$$2(3) + (-2)$$

$$12 - \frac{4}{8} = \boxed{8}$$

$$\frac{6 - 2}{2} + \frac{4}{2} = \boxed{2}$$

Operations with Integers. Simplify.

$$-9 - (2)(-3) =$$

$$-5 + 5(-2) - 9 =$$

$$-5(6 - 7) + 6 =$$

$$-9(-6) = \boxed{-3}$$

$$-5 + (-10) - 9 =$$

$$-5(-1) + 6$$

Distributive Property. Simplify. Use the distributive property in reverse.

$$-4(2x + 6)$$

$$15x + 3 = \underline{3(5x + 1)}$$

$$-8x - 24$$

$$27x - 9 = \underline{9(3x - 1)}$$

$$8 - (4x + 3) - 10x + 6$$

$$-14x + 11$$

terms	constants	coefficients	like terms
$-p^2$ $-4p$ 10 $-2p$ -1 $5p^2$	10 -1	-1 -4 -2 5	$-p^2$ $5p^2$ $-4p$ $-2p$ -1 $+10$

Simplify the expression:

$$4p^2 - 6p + 9$$

Properties of Numbers. Simplify the expression. Justify each step.	
$3(2x - 4) + 2x$	Expression
$6x - 12 + 2x$	Distributive Prop
$6x + 2x - 12$	Commutative Prop.
$(6x + 2x) - 12$	Associative Prop
$8x - 12$	simplify

Name the property that each equation illustrates.	
$10 + 0 = 10$	Identity Property of +
$3(x - 2) = 3x - 6$	Distributive Prop.
$5 \cdot \frac{1}{5} = 1$	Inverse prop of multiplication
$m + (-m) = 0$	Inverse prop of addition
$34 + 8 = 8 + 34$	Commutative Prop
$(2 \cdot 3) \cdot 6 = 2 \cdot (3 \cdot 6)$	Associative Prop

Real Numbers. Name all sets of numbers to which each number belongs. You can just use the first letter.

Rational	Irrational	Whole	Integer
-3.21 rational	$-\frac{1}{2}$ rational	18 whole Integer Rational	$\sqrt{7}$ irrational

Describe the difference between irrational and rational numbers. Must be at least THREE SENTENCES.

A rational number can be stated as a fraction, $\frac{a}{b}$, if $b \neq 0$; an irrational can not. A decimal with a repetend or terminating decimal is rational and a ^{non-}repeating decimal is not. The square root of a non-perfect square is irrational + the square root of a perfect square is rational (whole and an integer).